



SANFORD UNDERGROUND RESEARCH FACILITY

SOUTH DAKOTA SCIENCE AND TECHNOLOGY AUTHORITY

Waste Management Standard

Table of Contents

1.0 Purpose	4
2.0 Scope	4
3.0 Definitions.....	4
4.0 Responsibilities	5
5.0 Instructions	6
6.0 Documented Information/Related Documents.....	10

Revision History

Rev	Date	Section	Paragraph	Summary of Change	Authorized by
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1.0 Purpose

The purpose of this standard is to provide personnel at Sanford Underground Research Facility (SURF) guidance to ensure that waste management activities are conducted in a manner that is compliant with the requirements of the Resource Conservation and Recovery Act (RCRA) and South Dakota Codified Laws (SDCL).

South Dakota Science and Technology Authority (SDSTA) references the following to fulfill this standard:

- 40 CFR Part 260 – Hazardous Waste Management System: General
- 40 CFR Part 261 – Identification and Listing of Hazardous Waste
- 40 CFR Part 262 – Standards Applicable to Generators of Hazardous Waste
- 40 CFR 266, Subpart G – Spent Lead-Acid Batteries Being Reclaimed
- 40 CFR 273 – Standards for Universal Waste Management
- 40 CFR 279 – Standards for the Management of Used Oil
- SDCL § 34A-6 – Solid Waste Management
- SDCL § 34-44 Asbestos Abatement Training Project

2.0 Scope

This standard applies to all South Dakota Science and Technology Authority (SDSTA) personnel, contractors, and users of the facility that generate solid waste.

3.0 Definitions

Accumulation Time Limit – the maximum time that waste can be accumulated onsite.

- For Hazardous Wastes, the accumulation time limit is 270 days (disposal facility \geq 200 miles) from the date the container enters the 270-day accumulation unit.
- For Universal Wastes, the accumulation time limit is 1 year from the time the waste begins to accumulate.

Asbestos – a term used to describe naturally occurring fibrous silicate minerals, such as chrysotile, amosite, and crocidolite.

Asbestos Containing Material (ACM) – any material containing more than 1% asbestos.

Asbestos Projects – activities that involve asbestos, such as conducting inspections for asbestos, preparing asbestos management plans, or carrying out asbestos abatement projects.

Central Accumulation Area (CAA) – a central accumulation area is a designated hazardous waste accumulation area with hazardous waste accumulating in units subject to 40 CFR 262.16

Disposal – is the discharge, deposit, injection, dumping, spilling, leaking, or placing of any waste on any land or water.

Generator – any party, by site, whose act or process produces hazardous waste identified or listed in part 261 or whose act first causes a hazardous waste to become subject to regulation. More than one party

can be considered the generator of hazardous waste, and in these instances, the EPA typically refers to the two or more parties as co-generators. In cases where one or more persons meet the definition of generator, all persons are jointly and severally liable for compliance with the generator regulations.

Hazardous Waste – a solid waste that exhibits one or more of the following characteristics: ignitability, corrosivity, reactivity, or toxicity. A solid waste is determined to be a characteristic hazardous waste either by testing or by process knowledge. A hazardous waste may also be defined by listing, that is, named in any one of four lists (F-list, K-list, U-list and P-list) found in 40 CFR 261.30 through 40 CFR 261.33.

Medical Waste – wastes generated from health care, that may be contaminated by blood, body fluids, or other potentially infectious materials. Medical waste generated at SURF typically includes used sharps and used Personal Protective Equipment. See ESH-4000-S-007 Bloodborne Pathogen Standard for more information regarding medical waste generated at SURF.

Recycling – the action or process of converting waste into reusable material.

Satellite Accumulation Area (SAA) – is a designated collection point for hazardous waste that is located at or near the point of waste generation and is ‘under the control’ of the waste generator.

Small Quantity Generator – is a generator which produces between 220 pounds and 2,200 pounds of hazardous waste or no more than 2.2 pounds of acute waste in a calendar month. SDSTA is a small quantity generator of hazardous waste.

Solid Waste – any discarded material that is not excluded under 40 CFR 261.4(a) or that is not excluded by a variance granted under 40 CFR 260.30 and 40 CFR 260.31, or that is not excluded by a non-waste determination under 40 CFR 260.30 and 260.34. Solid waste is not limited to solid materials, and may include solids, liquids, and gases.

Universal Waste – are relatively common hazardous wastes that may be managed under the less stringent requirements of 40 CFR 273 that facilitate recycling. These wastes include aerosol cans, batteries, pesticides, lamps, and mercury-contained equipment.

Used Oil – is any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities.

- Used oil may include motor oil, grease, coolant, brake fluid, transmission fluid, hydraulic fluid, electrical insulating oil, and metalworking fluids.
- Used oil may not include virgin or unused oil, animal oil, vegetable oil, antifreeze, or oil containing > 1,000 ppm total halogens.

4.0 Responsibilities

4.1. SURF Laboratory Director

- 4.1.1. Ensures personnel, financial, and administrative resources to maintain compliance with this standard.

4.2. Environment, Safety, and Health (ESH) Department

- 4.2.1.** Develops, implements, and updates this standard.
- 4.2.2.** Communicates this standard to all personnel.
- 4.2.3.** Develops and provides waste management training to personnel at SURF.
- 4.2.4.** Understands federal, state, and local laws and regulations relating to solid waste management.
- 4.2.5.** Interfaces with federal, state, and local regulatory agencies.
- 4.2.6.** Maintains the required documents and records of waste training, generation, shipment, and disposal as outlined in the record keeping section of this document.
- 4.2.7.** Conducts weekly inspections of the CAA.
- 4.2.8.** Conducts monthly inspections of SAAs.
- 4.2.9.** Arranges hazardous and universal waste pick up and ensures the disposal is performed at an appropriate facility.
- 4.2.10.** Manages hazardous, medical, and universal waste disposal.
- 4.2.11.** Signs hazardous waste manifests and Land Disposal Restriction (LDR) Forms.
- 4.2.12.** Conducts waste characterization utilizing ESH-8000-F-009 Waste Characterization Profile Form.
- 4.2.13.** Retains associated records.

4.3. Surface Operations and Utilities Department

- 4.3.1.** Manages the disposal of non-hazardous solid waste and recyclables.
- 4.3.2.** Ensures non-hazardous solid waste streams are deposited into the designated container prior to removal from SURF.

4.4. Department Directors

- 4.4.1.** Communicate this standard throughout their department.
- 4.4.2.** Ensure that departmental staff comply with the requirements of this standard.

4.5. Project Managers

- 4.5.1.** Discuss waste management with the Environmental Manager or Environmental Coordinator prior to the start of a project, including but not limited to waste characterization, minimization, handling, storage, labeling, and disposal.
- 4.5.2.** Communicate the requirements of this standard to project employees and contractors and ensure that they comply with this standard.

4.6. All personnel at SURF

- 4.6.1.** Plans work, experiments, and other activities so that waste generation is minimized.
- 4.6.2.** Completes required waste management training.
- 4.6.3.** Stores and disposes of wastes in compliance with this standard.
- 4.6.4.** Contacts the Environmental Manager or Environmental Coordinator with questions regarding waste management.

5.0 Instructions

5.1. Waste Management Planning

- At SURF, solid waste is generated from a variety of sources. These waste-generating sources typically include:
 - Experiments performed by facility users
 - Projects performed by SDSTA employees
 - Projects performed by contractors or subcontractors

- Waste generation should be reviewed with the Environmental Manager or Environmental Coordinator prior to the start of a project or work. Waste characterization, minimization, handling, storage, labeling, and disposal practices should be discussed.
- Waste streams shall be classified as non-hazardous waste, hazardous waste, or universal waste using the ESH-8000-F-009 Waste Characterization Profile Form. Completed forms are retained.

5.2. Hazardous Waste

- SDSTA may not be the definitive generator of hazardous waste from activities conducted at SURF but may still be held jointly and severally liable as a co-generator.
 - If solid waste is anticipated to be generated, a Memorandum of Understanding (MOU), SCI-1000-F-002 User Agreement, or contract should be in place between SDSTA and facility users, contractors, and/or subcontractors that clearly delegates solid waste management responsibilities.
- The generation of hazardous waste should be minimized, when possible.
- Hazardous waste shall be stored in compatible containers in the CAA or in a SAA approved by SDSTA ESH.
- SAAs shall be managed as follows:
 - The SAA must be at or near the point of generation.
 - The SAA container must be closed when waste is not being added.
 - The SAA container must be labeled with the contents and the words “Hazardous Waste”.
 - Each SAA can accumulate up to 55 gallons of the designated non-acute hazardous waste.
 - Accumulation start dates are not required for SAA containers.
 - SAA containers must be labeled with the date that the container was filled and must be moved to the CAA within 3 days of the noted fill date.
- The CAA shall be managed as follows:
 - The hazards associated with the waste(s) stored in the CAA should be clearly identified at the entrance to the CAA.
 - Each hazardous waste container containing hazardous waste shall be labeled with:
 - ◆ The words “Hazardous Waste”.
 - ◆ An indication of the hazards associated with the hazardous waste.
 - ◆ The ‘start date.’ The start date is either the date that the container first begins to accumulate hazardous waste at the CAA, or the date that the hazardous waste is moved from a SAA to the CAA.
 - Hazardous waste placed in the CAA shall not be accumulated on site for more than 270 days.
- Inspections
 - Central Accumulation Area
 - ◆ Per 40 CFR 262.16(b)(2)(iv), containers of hazardous waste within the CAA shall be inspected weekly. SDSTA inspects the hazardous waste containers within the CAA on a weekly basis.

- ◆ There are no regulatory requirements to document this inspection. As a best management practice, the inspection should be documented using ESH-8000-F-006 180-270 Day Hazardous Waste Central Accumulation Area Inspection Form. Completed forms are retained.
- Satellite Accumulation Areas
 - ◆ There are no regulatory requirements to inspect containers in SAAs. As a best management practice, SDSTA should inspect SAAs monthly.
 - ◆ Inspections of SAAs should be documented using ESH-8000-F-015 Waste Area Inspection. Completed forms are retained.

5.3. Universal Waste

- Universal waste shall be managed as follows:
 - Universal Waste shall only be accumulated in locations approved by the SDSTA Environmental Manager or Environmental Coordinator.
 - Universal Waste containers must be capable of preventing the contents from contaminating the environment.
 - Universal Waste containers shall be closed when waste is not being added.
 - Universal Waste Containers shall be marked with:
 - ◆ The words “Universal Waste”.
 - ◆ An indication of the contents of the container (batteries, lamps, pesticide, etc.).
 - ◆ The start date, or date that the universal waste begins to accumulate inside the container.
- Universal waste shall not be accumulated on site for more than one year.

5.4. Nonhazardous Waste

- Non-hazardous waste is waste not classified as hazardous waste or universal waste. Nonhazardous waste may still be subject to certain regulatory requirements, and should be assessed on a case-by-case basis to ensure proper disposal.
- The Waste Management Hierarchy provided by the EPA ranks various non-hazardous waste management strategies, from most preferred to least preferred.



- o When feasible, non-hazardous waste management strategies should be prioritized from most preferred to least preferred, based on the Waste Management Hierarchy.
- Roll-off Dumpsters are utilized to ensure wastes are contained and segregated into the appropriate waste streams prior to delivery to a state permitted landfill, recycling center, or suitable equivalent that has been approved by the Environmental Manager. Roll-off dumpsters at SURF are typically used to contain the following waste streams:
 - o Municipal Solid Waste (MSW)
 - o Construction and Demolition (C&D) Waste
 - o Recyclable Scrap Metal
 - o Recyclable Wood
 - o Recyclable Cardboard
- Regulated Medical Waste
 - o Medical waste should be labeled and containerized as described in ESH-4000-S-007 Bloodborne Pathogen Standard.
 - o SDSTA maintains a third-party service contract for compliant medical waste disposal.
- Used Oil
 - o 40 CFR 279 establishes standards for the management of used oil.
 - o Containers of used oil shall be clearly labelled with the words 'Used Oil'.
 - o Used oil generated at SURF is subject to the container and storage requirements described in the ESH-8000-A-001 SDSTA Spill Prevention Control and Countermeasures Plan.
 - o SDSTA utilizes a third-party used oil recycling company to manage used oil generated at SURF.

5.5. Exemptions

- Spent Lead Acid Batteries
 - o Spent Lead Acid Batteries typically exhibit the hazardous waste characteristics for Corrosivity (D002) and Toxicity (D008 - Lead).
 - o 40 CFR 266 Subpart G provides an exemption to hazardous waste regulation requirements for spent lead acid batteries, provided that the spent lead acid batteries are managed in accordance with the requirements described in 40 CFR 266.80. SDSTA currently utilizes this exemption. Spent Lead Acid Batteries that are generated at SURF are managed as described in ESH-8000-A-006 Management of Spent Lead Acid Batteries.
- Used Oil Filters
 - o 40 CFR 261.4(b)(13) provides an exemption to hazardous waste management for Used Oil Filters, provided that the used oil filters have been managed using an approved method of oil drainage. Used oil filters that are generated at SURF are managed as described in ESH-8000-WI-002 Management of Used Oil Filters.
- Elementary Neutralization of Spent Acid
 - o 40 CFR 270.1(c)(2)(v) provides an exemption for corrosive hazardous wastes, provided that the wastes are managed in accordance with the requirements of the exemption.

- o To meet the requirements for exemption, the waste:
 - ◆ Must be hazardous only because of the corrosivity characteristic.
 - ◆ Must be neutralized in a tank, tank system, container, transport vehicle, or vessel as defined in 40 CFR 260.10.
- o Spent acid that is generated at SURF is managed as described in SOU-2000-SOP-001 Neutralizing Acid from Underground Science.

5.6. Asbestos Containing Material (ACM)

- Per SDCL 34-44-7, an owner of a facility containing asbestos shall allow only certified asbestos contractors to perform asbestos projects.
- Per SDCL 34-44-6, the asbestos contractor carrying out an asbestos project is responsible for the safe and proper handling and delivery of waste that includes friable asbestos material to a landfill authorized to receive such waste.

5.7. Training

- Waste Management Training is administered to newly hired employees via the Learning Management System (LMS).
- Waste Management Refresher Training is administered to SDSTA personnel and facility users on an annual basis via the LMS.

5.8. Record Keeping

- Hazardous waste manifests shall be kept on site for a minimum of three years from the Treatment, Storage, and Disposal Facility returned copy date. Manifests beyond this date may be stored in archives for a minimum of thirty years.
- Land Disposal Restriction (LDR) notices, LDR determination records, Hazardous Waste Profile Sheets, and Exception Reports should be kept with the associated manifests. These documents shall be kept on site for a minimum of three years.
- Personnel training records on current personnel shall be kept until closure of the facility. Training records on former employees shall be kept for at least three years from the date the employee last worked at the facility.

6.0 Documented Information/Related Document

- 6.1.** ESH-4000-S-007 Bloodborne Pathogen Standard
- 6.2.** ESH-8000-A-001 SDSTA Spill Prevention Control and Countermeasures Plan
- 6.3.** ESH-8000-A-006 Management of Spent Lead Acid Batteries
- 6.4.** ESH-8000-F-006 180-270 Day Hazardous Waste Central Accumulation Area Inspection Form
- 6.5.** ESH-8000-F-009 Waste Characterization Profile Form
- 6.6.** ESH-8000-F-015 Waste Area Inspection
- 6.7.** ESH-8000-WI-002 Management of Used Oil Filters
- 6.8.** SOU-2000-SOP-001 Neutralizing Acid from Underground Science
- 6.9.** SCI-1000-F-002 User Agreement